TRANSMITTAL OF APPEAL BRIEF

Docket No.
MIY-9007/DIV

In re Application of: Masanori Nakamura et al.

Application No.	Filing Date	Examiner	Group Art Unit
09/931,763-Conf. #6959	August 20, 2001	J. L. Goff	1733

Invention: POLYOLEFIN ARTICLE AND METHODS FOR MANUFACTURE THEREOF

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: November 18, 2003 .

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Dated: February 18, 2004

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Docket No.: MIY-9007/DIV
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Masanori Nakamura et al.

Application No.: 09/931,763 Confirmation No.: 6959

Filed: August 20, 2001 Art Unit: 1733

For: POLYOLEFIN ARTICLE AND METHODS FOR MANUFACTURE THEREOF Examiner: J. L. Goff

APPELLANT'S BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on November 18, 2003.

This is an Appeal Brief under 37 C.F.R. 1.192 and appeals the decision of the Examiner dated August 25, 2003 (Paper No. 8). Each of the topics required by 37 C.F.R. 1.192 is presented herewith and is labeled appropriately.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

This brief contains items under the following headings as required by 37 C.F.R. § 1.192 and M.P.E.P. § 1206:

I. Real Party In Interest
II Related Appeals and Interferences

I. REAL PARTY IN INTEREST

Sekisui Chemical Co., Ltd. of Osaka, Japan is the real party in interest of the present application. An assignment of all rights in the present application to Sekisui Chemical Co., Ltd. was executed by the inventor and recorded by the U.S. Patent and Trademark Office at **reel 010273, frame 0855.**

II. RELATED APPEALS AND INTERFERENCES

Application No. 09/355,946, the parent of this application, is concurrently on appeal, and may directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 14 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 1-12

2. Claims withdrawn from consideration but not canceled: None

3. Claims pending: 13-26

4. Claims allowed: None

5. Claims rejected: 13-26

C. Claims On Appeal

The claims on appeal are claims 13-26.

Accordingly, the Appellant hereby appeals the rejection of claims 13-26, which are presented in the Appendix.

IV. STATUS OF AMENDMENTS

No Amendment was filed following the final rejection of the pending claims.

V. SUMMARY OF INVENTION

Claim 13 recites a method for manufacture of a polyolefin article characterized as including the steps of: covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material (See, for example, page 25, lines 15-17); subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin (See, for example, page 25, lines 17-22).

Claim 26 recites a method for manufacture of a polyolefin article characterized as including the steps of: covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of

polyolefin having a melting point lower than that of said oriented polyolefin material; said oriented polyolefin material being prepared by subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion; subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin. See page 25, line 10 to page 26, line 5 and page 26, line 20 to page 27, line 4.

VI. ISSUES

The issues presented for consideration in this Appeal are as follows:

(1) Whether the Examiner erred in rejecting claim 13 under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art?

(2) Whether the Examiner erred in rejecting claim 14 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,717,624 to Ikenaga et al.?

(3) Whether the Examiner erred in rejecting claims 15, 16, 19, 21, 22 and 26 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,311,660 to Burnam et al.?

(4) Whether the Examiner erred in rejecting claims 17, 18, 20, 23 and 24 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and U.S. Patent 4,717,624 to Ikenaga et al. and further in view of U.S. Patent 4,311,660 to Burnam et al.?

(5) Whether the Examiner erred in rejecting claim 25 under 35 U.S.C. §103(a) as

allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 3,361,607 to Bruno?

VII. GROUPING OF CLAIMS

For purposes of this appeal brief only, and without conceding the teachings of any prior art reference, the claims have been grouped as indicated below:

(1) Claim 13 stands or falls alone with respect to the §102(b) rejection.

(2) Claim 13 stands or falls alone with respect to the §103(a) rejection.

(3) Claims 14-25 stand or fall together with respect to the §103(a) rejections.

(4) Claim 26 stands or falls alone with respect to the §103(a) rejections.

In Section VIII below, Applicant has included arguments supporting the separate patentability of each claim group as required by M.P.E.P. § 1206.

VIII. ARGUMENTS

In the Office Action of August 25, 2003 (Paper No. 8), the following rejections were presented by the Examiner:

(i) 35 U.S.C. §102

(1) The Examiner rejected claim 13 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art;

(ii) 35 U.S.C. §103

(1) The Examiner rejected claim 13 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art;

(2) The Examiner rejected claim 14 under under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,717,624 to Ikenaga et al.;

(3) The Examiner rejected claims 15, 16, 19, 21, 22 and 26 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,311,660 to Burnam et al.;

(4) The Examiner rejected claims 17, 18, 20, 23 and 24 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and U.S. Patent 4,717,624 to Ikenaga et al. and further in view of U.S. Patent 4,311,660 to Burnam et al.;

(5) The Examiner rejected claim 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 3,361,607 to Bruno.

(iii) Other

None

For at least the following reasons, Appellant submits that these objections and rejections are both technically and legally unsound and should therefore be reversed.

(i)(1) 35 U.S.C. §102

The Examiner rejected claims claim 13 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art. Appellant respectfully traverses this rejection.

Appellant initially notes that this is an improper rejection because:

1. the examiner has applied more than one reference in a §102 rejection;
2. the examiner has already acknowledged the deficiencies of Gash '076 as a §102 rejection in a previous office action;

3. the examiner has not mapped the claim to the reference as required.

For at least these reasons, this rejection is improper and should not be sustained.

Claim 13 recites a method for manufacture of a polyolefin article, including the steps of covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material; and subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

Gash discloses a two-step dry laminating method wherein at least two plastic films of the same or different nature are brought into intimate contact with one another and heated to a temperature up to the melting point of the film having the lowest melting point in order to form a low peel strength composite. These films may comprise polyolefin material, including oriented polyolefin, which may be joined through the use of heat and pressure rolls.

As acknowledged in the action, Gash fails to disclose, teach or suggest the oriented polyolefin film as having an average coefficient of linear expansion lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range, as is disclosed in claim 13 of the present application. The action seeks to remedy Gash's deficiency by alleging that one of ordinary skill in the art would readily expect the oriented polyolefin films in Gash to have an average coefficient of linear expansion of less than or equal to 5 x 10^{-5} (/°C) in the 20 - 80 °C range in view of the Specification's disclosure that "an average linear expansion coefficient of polyolefin in an unoriented state is generally greater than 5 x 10^{-5} (/°C) in the 20 - 80 °C range." *(page 7, lines 13-15).*

While the present application does state that the average coefficient of linear expansion of polyolefin in an unoriented state is generally greater than 5 x 10^{-5} (/°C) in the 20-80 °C range, it does not necessarily follow that all oriented polyolefin materials have a value lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range. This can be seen, for example, in comparative examples 4-12 of U.S. Patent No. 4,717,624 ("Ikenaga et al."), wherein each of the oriented layers possess average coefficients of linear expansion exceeding 5 x 10^{-5} (/°C). *(See col. 17-18).* As taught in the present application, it is only when the correct orientation ratio is chosen (preferably within 20 - 40) and a temperature within the correct range used (preferably within 85 °C - 120 °C) that oriented polyolefin materials having an average coefficient of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range are obtained. *(See page 13, lines 2-20).* The use of

temperatures and orientation ratios outside of these preferred ranges makes orientation at high ratios difficult, which in turn decreases the mechanical properties of the material and leads to increased average coefficients of linear expansion. *(See page 13, lines 17-20).*

Gash fails to disclose, teach or suggest the preferred orientation ratios or average coefficient of linear expansion values necessary to ensure that oriented polyolefin materials having an average coefficient of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range are obtained. In fact, because the preferred temperature range disclosed in Gash is between 60 – 180 °C, Gash does not employ the high orientation ratios required to achieve oriented materials having average coefficients of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range because temperatures above that of 120 °C are employed. As recited in the present invention, "the use of orientation temperature of exceeding 120 °C may result not only in the occurrence of sheet breakage, but also in the difficulty to effect orientation at high ratios." *(page 13)*. Gash's use of temperatures exceeding 120 °C, therefore, requires that high orientation ratios are not used, and oriented materials having average coefficients of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range are therefore not attained. Claim 25 has been added to further clarify this point, requiring the orientation temperature be maintained within a range of 85 – 120 °C.

Accordingly, certain conditions must be met to ensure that an oriented polyolefin material has a value lower than 5×10^{-5} (/°C) in the 20 - 80 °C range. Since, as discussed above, Gash fails to disclose, teach or suggest the conditions necessary to obtain an oriented material having an average coefficient of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range, a prima facie rejection of claim 13 has not been established, and withdrawal of this rejection is respectfully requested.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Gash '076 fails to disclose, either explicitly or implicitly, teach or suggest at least the above-noted features recited in independent claim 13, Gash '076 cannot anticipate the claim. At least in view of the foregoing, claim 13 is allowable, and the rejection should not be sustained.

(ii)(1) 35 U.S.C. §103

The Examiner rejected claims claim 13 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art. Appellant respectfully traverses this rejection.

As discussed above, this rejection is improper because the examiner did not map the claims.

As discussed above, claim 13 recites a method for manufacture of a polyolefin article, including the steps of covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material; and subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

Gash discloses a two-step dry laminating method wherein at least two plastic films of the same or different nature are brought into intimate contact with one another and heated to a temperature up to the melting point of the film having the lowest melting point in order to form a low peel strength composite. These films may comprise polyolefin material, including oriented polyolefin, which may be joined through the use of heat and pressure rolls.

As acknowledged in the action, Gash fails to disclose, teach or suggest the oriented polyolefin film as having an average coefficient of linear expansion lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range, as is disclosed in claim 13 of the present application. The action seeks to remedy Gash's deficiency by alleging that one of ordinary skill in the art would readily expect the oriented polyolefin films in Gash to have an average coefficient of linear expansion of less than or equal to 5 x 10^{-5} (/°C) in the 20 - 80 °C range in view of the Specification's disclosure that "an average linear expansion coefficient of polyolefin in an unoriented state is generally greater than 5 x 10^{-5} (/°C) in the 20 - 80 °C range." *(page 7, lines 13-15).*

While the present application does state that the average coefficient of linear expansion of polyolefin in an unoriented state is generally greater than 5 x 10^{-5} (/°C) in the 20-80 °C range, it does not necessarily follow that all oriented polyolefin materials have a value lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range. This can be seen, for example, in comparative examples 4-12 of U.S. Patent No. 4,717,624 ("Ikenaga et al."), wherein each of the oriented layers possess average coefficients of linear expansion exceeding 5 x 10^{-5} (/°C). *(See col. 17-18).* As taught in

the present application, it is only when the correct orientation ratio is chosen (preferably within 20 - 40) and a temperature within the correct range used (preferably within 85 °C - 120 °C) that oriented polyolefin materials having an average coefficient of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range are obtained. *(See page 13, lines 2-20).* The use of temperatures and orientation ratios outside of these preferred ranges makes orientation at high ratios difficult, which in turn decreases the mechanical properties of the material and leads to increased average coefficients of linear expansion. *(See page 13, lines 17-20).*

Gash fails to disclose, teach or suggest the preferred orientation ratios or average coefficient of linear expansion values necessary to ensure that oriented polyolefin materials having an average coefficient of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range are obtained. In fact, because the preferred temperature range disclosed in Gash is between 60 – 180 °C, Gash does not employ the high orientation ratios required to achieve oriented materials having average coefficients of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range because temperatures above that of 120 °C are employed. As recited in the present invention, "the use of orientation temperature of exceeding 120 °C may result not only in the occurrence of sheet breakage, but also in the difficulty to effect orientation at high ratios." *(page 13).* Gash's use of temperatures exceeding 120 °C, therefore, requires that high orientation ratios are not used, and oriented materials having average coefficients of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range are therefore not attained. Claim 25 has been added to further clarify this point, requiring the orientation temperature be maintained within a range of 85 – 120 °C.

Accordingly, certain conditions must be met to ensure that an oriented polyolefin material has a value lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range. Since, as discussed above, Gash fails to disclose, teach or suggest the conditions necessary to obtain an oriented material having an average coefficient of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range, a prima facie rejection of claim 13 has not been established, and withdrawal of this rejection is respectfully requested. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j).

Accordingly, for all of the reasons discussed above, this rejection should not be sustained.

(ii)(2) 35 U.S.C. §103

The Examiner rejected claim 14 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,717,624 to Ikenaga et al. Appellant respectfully traverses this rejection.

Claim 14, depending from claim 13, is also allowable for the reasons above. Moreover, this claim is further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

(ii)(3) 35 U.S.C. §103

The Examiner rejected claims 15, 16, 19, 21, 22 and 26 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,311,660 to Burnam et al. Appellant respectfully traverses this rejection.

Claims 15, 16, 19, 21 and 22 depending from claim 13, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

Claim 26 recites a method for manufacture of a polyolefin article characterized as including the steps of: covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material; said oriented polyolefin material being prepared by subjecting an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion; subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

Similar to claim 15, claim 26 includes the step of heat treating the surface of an oriented polyolefin material such that only the molecular orientation of the surface is relaxed, while the molecules at the central portion of the material remain oriented. *(See page 29, lines 15-24).* This heat treatment allows the oriented polyolefin material to be joined with other materials, providing enhanced mechanical properties. *(See page 33).*

In contrast, Gash requires that "the orientation in the films making up the laminate is not affected." *(col. 2, lines 31-34).* In fact, in each of the illustrative examples described in Gash, the Specification clearly stated that "[n]o pre-treatment whatsoever was given to the surfaces prior to the lamination process." *(col. 3, lines 24-25; col. 4, lines 10-12; 15-37).* Gash clearly fails to teach, disclose or suggest these limitations.

Barham et al. '660 is applied for their heat treating step. However, as discussed above, if there is no pretreatment in Gash, there can be no motivation to add a pretreatment to Gash, let alone a demonstration by the examiner that such a pretreatment could be added to Gash and would succeed, nor is there motivation to add the pretreatment.

Accordingly, a prima facie case of obviousness has not been established, and the rejection should not be sustained.

(ii)(4) 35 U.S.C. §103

The Examiner rejected claims 17, 18, 20, 23 and 24 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and U.S. Patent 4,717,624 to Ikenaga et al. and further in view of U.S. Patent 4,311,660 to Burnam et al. Appellant respectfully traverses this rejection.

Claims 17, 18, 20, 23 and 24 depending from claim 13, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

(ii)(5) 35 U.S.C. §103

The Examiner rejected claim 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 3,361,607 to Bruno. Appellant respectfully traverses this rejection.

Claim 25 depending from claim 13, is also allowable for the reasons above. Moreover, this claim is further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

(iii) Other

None

IX. CLAIMS INVOLVED IN THE APPEAL

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

Conclusion

In view of the foregoing reasons, Appellant submits that all of the rejections of claims 13-26 are improper and should not be sustained. Therefore, a reversal of the Rejections of August 25, 2003 (Paper No. 8), as to claims 13-26, is respectfully requested. Accordingly, the application and all claims 13-26 are in condition for allowance, and notice to that effect is solicited.

Dated: February 18, 2004

Respectfully submitted,

By _____

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/931,763

Claims 1-12: (Cancelled)

13. (previously presented) A method for manufacture of a polyolefin article characterized as including the steps of:

covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material;

subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

14. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, characterized in that said oriented polyolefin material comprises a plurality of oriented polyolefin sheets having minus values for average coefficient of linear expansion in the 20 – 80 °C range, and that an oriented or unoriented polyolefin sheet having a plus value for average coefficient of linear expansion in the 20 – 80 °C range is interposed between adjacent ones of said oriented polyolefin sheets covered with said polyolefin layer for subsequent joining by the application of pressure and heat.

15. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, characterized in that said oriented polyolefin material is prepared by subjecting an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the

surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion.

16. (previously presented) The method for manufacture of a polyolefin article as recited in claim 15, wherein the melting point of the surface layer, which is measure by DSC, is reduced within a range of 133 – 140 °C due to said heat treatment, while melting point of the central portion, which is measured by DSC under a constant tension, falls within a range of 140 – 150 °C, said polyolefin material subjected under said heat treatment is jointed for integration while maintaining a crystallized orientation of its central portion.

17. (previously presented) The method for manufacture of a polyolefin article as recited in claim 14, characterized in that said oriented polyolefin material is prepared by subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion.

18. (previously presented) The method for manufacture of a polyolefin article as recited in claim 17, wherein the melting point of the surface layer, which is measured by DSC, is reduced within a range of 133 – 140 °C due to said heat treatment, while melting point of the central portion, which is measured by DSC under a constant tension, falls within a range of 140 – 150 °C, said polyolefin material subjected under said heat treatment is jointed for integration while maintaining a crystallized orientation of its central portion.

19. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

20. (previously presented) The method for manufacture of a polyolefin article as recited in claim 14, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

21. (previously presented) The method for manufacture of a polyolefin article as recited in claim 15, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

22. (previously presented) The method for manufacture of a polyolefin article as recited in claim 16, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

23. (previously presented) The method for manufacture of a polyolefin article as recited in claim 17, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

24. (previously presented) The method for manufacture of a polyolefin article as recited in claim 18, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

25. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, wherein an orientation temperature used to obtain said oriented polyolefin material is maintained within a range of 85 °C - 120 °C.

26. (previously presented) A method for manufacture of a polyolefin article characterized as including the steps of:

covering an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material;

said oriented polyolefin material being prepared by subjecting an oriented

polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion;

subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

Docket No.: MIY-9007/DIV
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Masanori Nakamura et al.

Application No.: 09/931,763 Confirmation No.: 6959

Filed: August 20, 2001 Art Unit: 1733

For: POLYOLEFIN ARTICLE AND METHODS FOR MANUFACTURE THEREOF Examiner: J. L. Goff

APPELLANT'S BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on November 18, 2003.

This is an Appeal Brief under 37 C.F.R. 1.192 and appeals the decision of the Examiner dated August 25, 2003 (Paper No. 8). Each of the topics required by 37 C.F.R. 1.192 is presented herewith and is labeled appropriately.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefor, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

This brief contains items under the following headings as required by 37 C.F.R. § 1.192 and M.P.E.P. § 1206:

I. Real Party In Interest
II Related Appeals and Interferences

I. REAL PARTY IN INTEREST

Sekisui Chemical Co., Ltd. of Osaka, Japan is the real party in interest of the present application. An assignment of all rights in the present application to Sekisui Chemical Co., Ltd. was executed by the inventor and recorded by the U.S. Patent and Trademark Office at **reel 010273, frame 0855.**

II. RELATED APPEALS AND INTERFERENCES

Application No. 09/355,946, the parent of this application, is concurrently on appeal, and may directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 14 claims pending in application.

B. Current Status of Claims

1. Claims canceled: 1-12

2. Claims withdrawn from consideration but not canceled: None

3. Claims pending: 13-26

4. Claims allowed: None

5. Claims rejected: 13-26

C. Claims On Appeal

The claims on appeal are claims 13-26.

Accordingly, the Appellant hereby appeals the rejection of claims 13-26, which are presented in the Appendix.

IV. STATUS OF AMENDMENTS

No Amendment was filed following the final rejection of the pending claims.

V. SUMMARY OF INVENTION

Claim 13 recites a method for manufacture of a polyolefin article characterized as including the steps of: covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material (See, for example, page 25, lines 15-17); subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin (See, for example, page 25, lines 17-22).

Claim 26 recites a method for manufacture of a polyolefin article characterized as including the steps of: covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of

polyolefin having a melting point lower than that of said oriented polyolefin material; said oriented polyolefin material being prepared by subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion; subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin. See page 25, line 10 to page 26, line 5 and page 26, line 20 to page 27, line 4.

VI. ISSUES

The issues presented for consideration in this Appeal are as follows:

(1) Whether the Examiner erred in rejecting claim 13 under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art?

(2) Whether the Examiner erred in rejecting claim 14 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,717,624 to Ikenaga et al.?

(3) Whether the Examiner erred in rejecting claims 15, 16, 19, 21, 22 and 26 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,311,660 to Burnam et al.?

(4) Whether the Examiner erred in rejecting claims 17, 18, 20, 23 and 24 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and U.S. Patent 4,717,624 to Ikenaga et al. and further in view of U.S. Patent 4,311,660 to Burnam et al.?

(5) Whether the Examiner erred in rejecting claim 25 under 35 U.S.C. §103(a) as

allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 3,361,607 to Bruno?

VII. GROUPING OF CLAIMS

For purposes of this appeal brief only, and without conceding the teachings of any prior art reference, the claims have been grouped as indicated below:

(1) Claim 13 stands or falls alone with respect to the §102(b) rejection.

(2) Claim 13 stands or falls alone with respect to the §103(a) rejection.

(3) Claims 14-25 stand or fall together with respect to the §103(a) rejections.

(4) Claim 26 stands or falls alone with respect to the §103(a) rejections.

In Section VIII below, Applicant has included arguments supporting the separate patentability of each claim group as required by M.P.E.P. § 1206.

VIII. ARGUMENTS

In the Office Action of August 25, 2003 (Paper No. 8), the following rejections were presented by the Examiner:

(i) 35 U.S.C. §102

(1) The Examiner rejected claim 13 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art;

(ii) 35 U.S.C. §103

(1) The Examiner rejected claim 13 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art;

(2) The Examiner rejected claim 14 under under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,717,624 to Ikenaga et al.;

(3) The Examiner rejected claims 15, 16, 19, 21, 22 and 26 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,311,660 to Burnam et al.;

(4) The Examiner rejected claims 17, 18, 20, 23 and 24 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and U.S. Patent 4,717,624 to Ikenaga et al. and further in view of U.S. Patent 4,311,660 to Burnam et al.;

(5) The Examiner rejected claim 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 3,361,607 to Bruno.

(iii) Other

None

For at least the following reasons, Appellant submits that these objections and rejections are both technically and legally unsound and should therefore be reversed.

(i)(1) 35 U.S.C. §102

The Examiner rejected claims claim 13 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art. Appellant respectfully traverses this rejection.

Appellant initially notes that this is an improper rejection because:

1. the examiner has applied more than one reference in a §102 rejection;
2. the examiner has already acknowledged the deficiencies of Gash '076 as a §102 rejection in a previous office action;

3. the examiner has not mapped the claim to the reference as required.

For at least these reasons, this rejection is improper and should not be sustained.

Claim 13 recites a method for manufacture of a polyolefin article, including the steps of covering an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material; and subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

Gash discloses a two-step dry laminating method wherein at least two plastic films of the same or different nature are brought into intimate contact with one another and heated to a temperature up to the melting point of the film having the lowest melting point in order to form a low peel strength composite. These films may comprise polyolefin material, including oriented polyolefin, which may be joined through the use of heat and pressure rolls.

As acknowledged in the action, Gash fails to disclose, teach or suggest the oriented polyolefin film as having an average coefficient of linear expansion lower than 5×10^{-5} (/°C) in the 20 - 80 °C range, as is disclosed in claim 13 of the present application. The action seeks to remedy Gash's deficiency by alleging that one of ordinary skill in the art would readily expect the oriented polyolefin films in Gash to have an average coefficient of linear expansion of less than or equal to 5×10^{-5} (/°C) in the 20 - 80 °C range in view of the Specification's disclosure that "an average linear expansion coefficient of polyolefin in an unoriented state is generally greater than 5×10^{-5} (/°C) in the 20 - 80 °C range." *(page 7, lines 13-15).*

While the present application does state that the average coefficient of linear expansion of polyolefin in an unoriented state is generally greater than 5×10^{-5} (/°C) in the 20-80 °C range, it does not necessarily follow that all oriented polyolefin materials have a value lower than 5×10^{-5} (/°C) in the 20 - 80 °C range. This can be seen, for example, in comparative examples 4-12 of U.S. Patent No. 4,717,624 ("Ikenaga et al."), wherein each of the oriented layers possess average coefficients of linear expansion exceeding 5×10^{-5} (/°C). *(See col. 17-18).* As taught in the present application, it is only when the correct orientation ratio is chosen (preferably within 20 - 40) and a temperature within the correct range used (preferably within 85 °C - 120 °C) that oriented polyolefin materials having an average coefficient of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range are obtained. *(See page 13, lines 2-20).* The use of

temperatures and orientation ratios outside of these preferred ranges makes orientation at high ratios difficult, which in turn decreases the mechanical properties of the material and leads to increased average coefficients of linear expansion. *(See page 13, lines 17-20).*

Gash fails to disclose, teach or suggest the preferred orientation ratios or average coefficient of linear expansion values necessary to ensure that oriented polyolefin materials having an average coefficient of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range are obtained. In fact, because the preferred temperature range disclosed in Gash is between 60 – 180 °C, Gash does not employ the high orientation ratios required to achieve oriented materials having average coefficients of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range because temperatures above that of 120 °C are employed. As recited in the present invention, "the use of orientation temperature of exceeding 120 °C may result not only in the occurrence of sheet breakage, but also in the difficulty to effect orientation at high ratios." *(page 13)*. Gash's use of temperatures exceeding 120 °C, therefore, requires that high orientation ratios are not used, and oriented materials having average coefficients of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range are therefore not attained. Claim 25 has been added to further clarify this point, requiring the orientation temperature be maintained within a range of 85 – 120 °C.

Accordingly, certain conditions must be met to ensure that an oriented polyolefin material has a value lower than 5×10^{-5} (/°C) in the 20 - 80 °C range. Since, as discussed above, Gash fails to disclose, teach or suggest the conditions necessary to obtain an oriented material having an average coefficient of linear expansion of less than 5×10^{-5} (/°C) in the 20 – 80 °C range, a prima facie rejection of claim 13 has not been established, and withdrawal of this rejection is respectfully requested.

A document can only anticipate a claim if the document discloses, explicitly or implicitly, each and every feature recited in the claim. Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Since Gash '076 fails to disclose, either explicitly or implicitly, teach or suggest at least the above-noted features recited in independent claim 13, Gash '076 cannot anticipate the claim. At least in view of the foregoing, claim 13 is allowable, and the rejection should not be sustained.

(ii)(1) 35 U.S.C. §103

The Examiner rejected claims claim 13 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art. Appellant respectfully traverses this rejection.

As discussed above, this rejection is improper because the examiner did not map the claims.

As discussed above, claim 13 recites a method for manufacture of a polyolefin article, including the steps of covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material; and subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

Gash discloses a two-step dry laminating method wherein at least two plastic films of the same or different nature are brought into intimate contact with one another and heated to a temperature up to the melting point of the film having the lowest melting point in order to form a low peel strength composite. These films may comprise polyolefin material, including oriented polyolefin, which may be joined through the use of heat and pressure rolls.

As acknowledged in the action, Gash fails to disclose, teach or suggest the oriented polyolefin film as having an average coefficient of linear expansion lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range, as is disclosed in claim 13 of the present application. The action seeks to remedy Gash's deficiency by alleging that one of ordinary skill in the art would readily expect the oriented polyolefin films in Gash to have an average coefficient of linear expansion of less than or equal to 5 x 10^{-5} (/°C) in the 20 - 80 °C range in view of the Specification's disclosure that "an average linear expansion coefficient of polyolefin in an unoriented state is generally greater than 5 x 10^{-5} (/°C) in the 20 - 80 °C range." *(page 7, lines 13-15).*

While the present application does state that the average coefficient of linear expansion of polyolefin in an unoriented state is generally greater than 5 x 10^{-5} (/°C) in the 20-80 °C range, it does not necessarily follow that all oriented polyolefin materials have a value lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range. This can be seen, for example, in comparative examples 4-12 of U.S. Patent No. 4,717,624 ("Ikenaga et al."), wherein each of the oriented layers possess average coefficients of linear expansion exceeding 5 x 10^{-5} (/°C). *(See col. 17-18).* As taught in

the present application, it is only when the correct orientation ratio is chosen (preferably within 20 - 40) and a temperature within the correct range used (preferably within 85 °C - 120 °C) that oriented polyolefin materials having an average coefficient of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range are obtained. *(See page 13, lines 2-20).* The use of temperatures and orientation ratios outside of these preferred ranges makes orientation at high ratios difficult, which in turn decreases the mechanical properties of the material and leads to increased average coefficients of linear expansion. *(See page 13, lines 17-20).*

Gash fails to disclose, teach or suggest the preferred orientation ratios or average coefficient of linear expansion values necessary to ensure that oriented polyolefin materials having an average coefficient of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range are obtained. In fact, because the preferred temperature range disclosed in Gash is between 60 – 180 °C, Gash does not employ the high orientation ratios required to achieve oriented materials having average coefficients of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range because temperatures above that of 120 °C are employed. As recited in the present invention, "the use of orientation temperature of exceeding 120 °C may result not only in the occurrence of sheet breakage, but also in the difficulty to effect orientation at high ratios." *(page 13).* Gash's use of temperatures exceeding 120 °C, therefore, requires that high orientation ratios are not used, and oriented materials having average coefficients of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range are therefore not attained. Claim 25 has been added to further clarify this point, requiring the orientation temperature be maintained within a range of 85 – 120 °C.

Accordingly, certain conditions must be met to ensure that an oriented polyolefin material has a value lower than 5 x 10^{-5} (/°C) in the 20 - 80 °C range. Since, as discussed above, Gash fails to disclose, teach or suggest the conditions necessary to obtain an oriented material having an average coefficient of linear expansion of less than 5 x 10^{-5} (/°C) in the 20 – 80 °C range, a prima facie rejection of claim 13 has not been established, and withdrawal of this rejection is respectfully requested. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j).

Accordingly, for all of the reasons discussed above, this rejection should not be sustained.

(ii)(2) 35 U.S.C. §103

The Examiner rejected claim 14 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,717,624 to Ikenaga et al. Appellant respectfully traverses this rejection.

Claim 14, depending from claim 13, is also allowable for the reasons above. Moreover, this claim is further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

(ii)(3) 35 U.S.C. §103

The Examiner rejected claims 15, 16, 19, 21, 22 and 26 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 4,311,660 to Burnam et al. Appellant respectfully traverses this rejection.

Claims 15, 16, 19, 21 and 22 depending from claim 13, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

Claim 26 recites a method for manufacture of a polyolefin article characterized as including the steps of: covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material; said oriented polyolefin material being prepared by subjecting an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion; subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

Similar to claim 15, claim 26 includes the step of heat treating the surface of an oriented polyolefin material such that only the molecular orientation of the surface is relaxed, while the molecules at the central portion of the material remain oriented. *(See page 29, lines 15-24).* This heat treatment allows the oriented polyolefin material to be joined with other materials, providing enhanced mechanical properties. *(See page 33).*

In contrast, Gash requires that "the orientation in the films making up the laminate is not affected." *(col. 2, lines 31-34).* In fact, in each of the illustrative examples described in Gash, the Specification clearly stated that "[n]o pre-treatment whatsoever was given to the surfaces prior to the lamination process." *(col. 3, lines 24-25; col. 4, lines 10-12; 15-37).* Gash clearly fails to teach, disclose or suggest these limitations.

Barham et al. '660 is applied for their heat treating step. However, as discussed above, if there is no pretreatment in Gash, there can be no motivation to add a pretreatment to Gash, let alone a demonstration by the examiner that such a pretreatment could be added to Gash and would succeed, nor is there motivation to add the pretreatment.

Accordingly, a prima facie case of obviousness has not been established, and the rejection should not be sustained.

(ii)(4) 35 U.S.C. §103

The Examiner rejected claims 17, 18, 20, 23 and 24 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and U.S. Patent 4,717,624 to Ikenaga et al. and further in view of U.S. Patent 4,311,660 to Burnam et al. Appellant respectfully traverses this rejection.

Claims 17, 18, 20, 23 and 24 depending from claim 13, are also allowable for the reasons above. Moreover, these claims are further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

(ii)(5) 35 U.S.C. §103

The Examiner rejected claim 25 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,355,076 to Gash in view of Applicants alleged admitted prior art and further in view of U.S. Patent 3,361,607 to Bruno. Appellant respectfully traverses this rejection.

Claim 25 depending from claim 13, is also allowable for the reasons above. Moreover, this claim is further distinguished by the materials recited therein, particularly within the claimed combination. Accordingly, this rejection cannot be sustained.

(iii) Other

None

IX. CLAIMS INVOLVED IN THE APPEAL

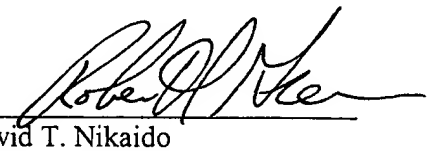
A copy of the claims involved in the present appeal is attached hereto as Appendix A.

Conclusion

In view of the foregoing reasons, Appellant submits that all of the rejections of claims 13-26 are improper and should not be sustained. Therefore, a reversal of the Rejections of August 25, 2003 (Paper No. 8), as to claims 13-26, is respectfully requested. Accordingly, the application and all claims 13-26 are in condition for allowance, and notice to that effect is solicited.

Dated: February 18, 2004

Respectfully submitted,

By 

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/931,763

Claims 1-12: (Cancelled)

13. (previously presented) A method for manufacture of a polyolefin article characterized as including the steps of:

covering an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material;

subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.

14. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, characterized in that said oriented polyolefin material comprises a plurality of oriented polyolefin sheets having minus values for average coefficient of linear expansion in the 20 – 80 °C range, and that an oriented or unoriented polyolefin sheet having a plus value for average coefficient of linear expansion in the 20 – 80 °C range is interposed between adjacent ones of said oriented polyolefin sheets covered with said polyolefin layer for subsequent joining by the application of pressure and heat.

15. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, characterized in that said oriented polyolefin material is prepared by subjecting an oriented polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the

surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion.

16. (previously presented) The method for manufacture of a polyolefin article as recited in claim 15, wherein the melting point of the surface layer, which is measure by DSC, is reduced within a range of 133 – 140 °C due to said heat treatment, while melting point of the central portion, which is measured by DSC under a constant tension, falls within a range of 140 – 150 °C, said polyolefin material subjected under said heat treatment is jointed for integration while maintaining a crystallized orientation of its central portion.

17. (previously presented) The method for manufacture of a polyolefin article as recited in claim 14, characterized in that said oriented polyolefin material is prepared by subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion.

18. (previously presented) The method for manufacture of a polyolefin article as recited in claim 17, wherein the melting point of the surface layer, which is measured by DSC, is reduced within a range of 133 – 140 °C due to said heat treatment, while melting point of the central portion, which is measured by DSC under a constant tension, falls within a range of 140 – 150 °C, said polyolefin material subjected under said heat treatment is jointed for integration while maintaining a crystallized orientation of its central portion.

19. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

20. (previously presented) The method for manufacture of a polyolefin article as recited in claim 14, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

21. (previously presented) The method for manufacture of a polyolefin article as recited in claim 15, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

22. (previously presented) The method for manufacture of a polyolefin article as recited in claim 16, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

23. (previously presented) The method for manufacture of a polyolefin article as recited in claim 17, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

24. (previously presented) The method for manufacture of a polyolefin article as recited in claim 18, characterized as including the steps of:

subjecting an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that its surface melts; and

effecting joining of said oriented polyolefin material by the application of pressure and heat at a temperature below a melting point of the heat-treated oriented polyolefin material but sufficient to melt said surface.

25. (previously presented) The method for manufacture of a polyolefin article as recited in claim 13, wherein an orientation temperature used to obtain said oriented polyolefin material is maintained within a range of 85 °C - 120 °C.

26. (previously presented) A method for manufacture of a polyolefin article characterized as including the steps of:

covering an oriented polyolefin material having a value of not exceeding 5×10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range with a layer of polyolefin having a melting point lower than that of said oriented polyolefin material;

said oriented polyolefin material being prepared by subjecting an oriented

polyolefin material having a value of not exceeding 5 x 10^{-5} (/°C) for average coefficient of linear expansion in the 20 – 80 °C range to a heat treatment so that only its surface layer melts while its central portion is left unmelted, whereby only its molecular orientation at the surface layer is relaxed while its molecules at the central portion is kept oriented, and the surface layer melts at a lower temperature than does the central portion;

subsequent to the covering with the polyolefin layer, effecting joining of the oriented polyolefin material by the application of pressure and heat at a temperature below the melting point of the oriented polyolefin material but sufficient to soften or melt said covering polyolefin.